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10/821,791	04/09/2004	Chaitanya Kodeboyina	1014-086US01/JNP-0374	9340
72689	7590	04/10/2009	EXAMINER	
SHUMAKER & SIEFFERT, P.A. 1625 RADIO DRIVE , SUITE 300 WOODBURY, MN 55125			LAI, MICHAEL C	
			ART UNIT	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/821,791	<b>Applicant(s)</b> KODEBOYINA, CHAITANYA	
	<b>Examiner</b> MICHAEL C. LAI	<b>Art Unit</b> 2457	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 31-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 31-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/29/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This office action is responsive to communication filed on 12/16/2008.

Claims 1-29 and 31-38 have been examined.

#### ***Response to Amendment***

2. The examiner has acknowledged the amended claims 1, 2, 12-14, 17, 22, 24, 25, 31, 31-35, cancelled claim 30, and new claim 38. The objections to the specification and claim 17 have been corrected and withdrawn accordingly. The 101 rejection to claims 12-23 has been corrected and withdrawn accordingly. Claims 1-29 and 31-38 are pending.

#### ***Response to Arguments***

3. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 35 recites the limitation "the one or more intermediate networks" in line

5. There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 103***

Art Unit: 2457

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 5-14, 16-26, 28-29, and 31-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson et al. (US 20040223500 A1, hereinafter Sanderson), and in view of Luo (US 2005/0044262 A1, hereinafter Luo).

Regarding claim 1, Sanderson discloses a method comprising:

establishing a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network [para. 0133, 0137];

communicating layer two (L2) service information using a first routing protocol between a first device associated with the first customer network and a second device associated with the second customer network [para. 0135-0136]; and

providing an L2 service in accordance with the L2 service information to transport L2 communications between the first customer network and the second customer network through the plurality of intermediate networks using the LSP [para. 0162].

Sanderson discloses the claimed invention except for wherein communicating the L2 service information using the first routing protocol comprises the first device outputting a routing communication in accordance with the first routing

protocol, wherein the routing communication includes the L2 service information.

However, Luo discloses that a common layer 2 virtual private network address is defined as a concatenation of the Router ID (or globally unique extension thereof) and Forwarder Identifier [para. 0041]. Luo further discloses that the common layer 2 virtual private network address facilitates auto-discovery and the Border Gateway Protocol may be used for auto-discovery of remote forwarders [para. 0042]. A forwarder identifier is part of the L2 service information (according to paragraph 0032 of the original specification, site-id's). Indeed, Luo discloses the limitation of routing protocol includes the L2 service information. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Luo's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol, thereby establishing connectivity among forwarders of different applications [abstract].

Regarding claim 2, Sanderson further discloses wherein establishing an LSP comprises exchanging label information associated with the LSP between the plurality of intermediate networks using a second routing protocol that has been extended to distribute the label information [para. 0135-0140, BGP].

Regarding claim 3, Sanderson further discloses wherein the second routing protocol carries the label information in association with routes advertised between the intermediate networks [para. 0088].

Regarding claim 5, Sanderson further discloses wherein the second routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 6, Sanderson further discloses wherein the label information conforms to one of Multi-protocol Label Switching (MPLS) or the Label Distribution Protocol (LDP) [para. 0165].

Regarding claim 7, Sanderson further discloses wherein the first routing protocol is the same as the second routing protocol [para. 0135-00140, EBGp, IBGP].

Regarding claim 8, Sanderson further discloses communicating L2 service information using a first routing protocol comprises communicating the L2 service information between the first device and the second device using an exterior routing protocol [para. 0090, EBGp].

Regarding claim 9, Sanderson further discloses:

wherein communicating L2 service information comprises communicating the L2 service information using an intermediate route relay device [para. 0079, PE routers],

wherein the L2 service information includes information for L2 sites or end-points within the second customer network and next hop information

Art Unit: 2457

used to reach these L2 sites or end-points from the first customer network [para. 0168-0169], and

wherein the method includes configuring the intermediate route relay device to maintain and relay the next hop information unchanged via the exterior routing protocol [para. 0155].

Regarding claims 10, 21, and 32, Sanderson discloses the claimed invention except for the VPLS and Ethernet. Luo teaches L2 service using the Virtual Private LAN Service [para. 0010-0011] and L2 communications using Ethernet communications [para. 0004]. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Luo's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by using the Virtual Private LAN Service for L2 service, thereby establishing connectivity among forwarders of different applications [abstract]. It also would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Luo's teaching into Sanderson's method for the purpose of using a proven technology by using the Ethernet communications for L2 communications, thereby reducing the risk of trying new technologies.

Regarding claim 11, Sanderson further discloses wherein providing an L2 service comprises:

receiving L2 communications from the first customer network [para. 0139, ingress LSP]; and

assigning labels to the L2 communications from the first customer network in accordance with the label information to form packets for transporting the L2 communications from the first customer network to the second customer network [para. 0139, inner label].

Regarding claim 12, Sanderson discloses a device comprising:

one or more interface cards configured to communicate packets via input links and output links; [para. 0051]

a routing process that receives label information for a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, wherein the routing process receives the label information from packets received by the one or more interface cards [para. 0133, 0137];

a first routing protocol that receives layer two (L2) service information associated with the second customer network [para. 0135-0136], and an L2 service that operates in accordance with the L2 service information and transports L2 communications between the first customer network and the second customer network through the plurality of intermediate networks in accordance with the label information [para. 0162].



Sanderson discloses the claimed invention except for receiving a routing communication that includes the L2 service information. However, Luo discloses that a common layer 2 virtual private network address is defined as a concatenation of the Router ID (or globally unique extension thereof) and Forwarder Identifier [para. 0041]. Luo further discloses that the common layer 2 virtual private network address facilitates auto-discovery and the Border Gateway Protocol may be used for auto-discovery of remote forwarders [para. 0042]. A forwarder identifier is part of the L2 service information (according to paragraph 0032 of the original specification, site-id's). Indeed, Luo discloses the limitation of routing protocol includes the L2 service information. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Luo's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol, thereby establishing connectivity among forwarders of different applications [abstract].

Regarding claim 13, Sanderson further discloses wherein the routing process receives the label information through the plurality of intermediate networks via a second routing protocol that has been extended to distribute the label information [para. 0135-0140, BGP].

Regarding claim 14, Sanderson further discloses wherein the second routing protocol carries the label information in association with routes advertised between the plurality of intermediate networks [para. 0088].

Regarding claim 16, Sanderson further discloses wherein the second routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 17, Sanderson further discloses wherein the first routing protocol is the same as the second routing protocol [para. 0135-00140, EBGp, IBGP].

Regarding claim 18, Sanderson further discloses wherein the label information conforms to one of Multi-protocol Label Switching (MPLS) or the Label Distribution Protocol (LDP) [para. 0165].

Regarding claim 19, Sanderson further discloses wherein the device receives the L2 service information from a second device associated with the second customer network via an exterior routing protocol [para. 0090, EBGp].

Regarding claim 20, Sanderson further discloses:

wherein the L2 service information includes information for L2 sites or end-points in the second customer network and next hop information used by the device to reach these remote L2 sites or end-points [para. 0079, PE routers],

wherein the device is configured relay the next hop information unchanged using the exterior routing protocol when the device receives the L2 service

Art Unit: 2457

information and the next hop information via an intermediate route relay device [para. 0155, 0168-0169].

Regarding claim 22, Sanderson further discloses wherein the L2 service receives L2 communications from the first customer network [para. 0139, ingress LSP], and assigns labels to the L2 communications from the first customer network in accordance with the label information to form packets for transporting the L2 communications from the first customer network to the second customer network through the plurality of intermediate networks via the LSP [para. 0139, inner label].

Regarding claim 23, Sanderson further discloses wherein the device comprises a provider edge router or a customer edge router [para. 0133, 0137].

Regarding claim 24, Sanderson discloses a system comprising:

a border router that establishes a label switched path (LSP) through a plurality of intermediate networks, wherein the LSP communicatively couples a first customer network and a second customer network [para. 0133, 0137];

a first route reflector associated with the first customer network that communicates layer two (L2) service information with a second route reflector associated with the second customer network via routing communications that conform to an exterior routing protocol [para. 0135-0136]; and

an edge router that provides an L2 service to the first customer network in accordance with the L2 service information to transport L2 communications

between the first customer network and the second customer network through the plurality of intermediate networks using the LSP [para. 0162].

Sanderson discloses the claimed invention except for the routing communications include the L2 service information. However, Luo discloses that a common layer 2 virtual private network address is defined as a concatenation of the Router ID (or globally unique extension thereof) and Forwarder Identifier [para. 0041]. Luo further discloses that the common layer 2 virtual private network address facilitates auto-discovery and the Border Gateway Protocol may be used for auto-discovery of remote forwarders [para. 0042]. A forwarder identifier is part of the L2 service information (according to paragraph 0032 of the original specification, site-id's). Indeed, Luo discloses the limitation of routing protocol includes the L2 service information. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Luo's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol, thereby establishing connectivity among forwarders of different applications [abstract].

Regarding claim 25, Sanderson further discloses wherein the border router establishes the LSP by exchanging label information associated with the LSP between the plurality of intermediate networks using a routing protocol [para. 0135-0140, BGP].

Regarding claim 26, Sanderson further discloses wherein the routing protocol has been redefined to carry the label information in association with routes advertised between the intermediate networks [para. 0088].

Regarding claim 28, Sanderson further discloses wherein the routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 29, Sanderson further discloses wherein the label information conforms to one of Multi-protocol Label Switching (MPLS) or the Label Distribution Protocol (LDP) [para. 0165].

Regarding claim 31, Sanderson further discloses:

wherein the L2 service information specifies one or more L2 sites or end-points in the second customer network and includes next hop information used to reach these L2 sites or end-points from the first customer network [para. 0079, PE routers],

wherein the first and second route reflectors are configured to maintain and relay the next hop information unchanged upon receiving the next hop information via the exterior routing protocol [para. 0155, 0168-0169].

Regarding claim 33, Sanderson further discloses wherein the edge router provides an L2 service by receiving L2 communications from the first customer network [para. 0139, ingress LSP], and assigning labels to the L2 communications from the first customer network in accordance with the label information to form packets for transporting the L2 communications from the first

customer network to the second customer network through the plurality of intermediate networks via the LSP [para. 0139, inner label].

Regarding claim 34, Sanderson discloses a computer-readable medium comprising instructions to cause a processor to:

execute a routing process that receives label information for a label switched path (LSP) through plurality of intermediate networks communicatively coupled between a first customer network and a second customer network, wherein the L2 service information is received using the first routing protocol [para. 0133, 0137]; and

execute a layer two (L2) service that receives L2 service information associated with the second customer network using a first routing protocol [para. 0135-0136], and transports L2 communications between the first customer network and the second customer network through the plurality of intermediate networks in accordance with the label information [para. 0162].

Sanderson discloses the claimed invention except for receiving a routing communication that includes the L2 service information. However, Luo discloses that a common layer 2 virtual private network address is defined as a concatenation of the Router ID (or globally unique extension thereof) and Forwarder Identifier [para. 0041]. Luo further discloses that the common layer 2 virtual private network address facilitates auto-discovery and the Border Gateway Protocol may be used for auto-discovery of remote forwarders [para. 0042]. A forwarder identifier is part of the L2 service information (according to paragraph

0032 of the original specification, site-id's). Indeed, Luo discloses the limitation of routing protocol includes the L2 service information. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Luo's teaching into Sanderson's method for the purpose of facilitating interconnections among heterogeneous layer 2 virtual private network applications by including the L2 service information in the routing communication protocol, thereby establishing connectivity among forwarders of different applications [abstract].

Regarding claim 35, Sanderson further discloses

wherein the routing process receives the label information through the plurality of intermediate networks via a second routing protocol [para. 0135-0140, BGP], and

wherein the second routing protocol carries the label information in association with routes advertised between the one or more intermediate networks [para. 0088].

Regarding claim 36, Sanderson further discloses wherein the second routing protocol comprises the Border Gateway Protocol (BGP) [para. 0135-0140, BGP].

Regarding claim 37, Sanderson further discloses wherein the first routing protocol is the same as the second routing protocol [para. 0135-00140, EBGp, IBGP].

Regarding claim 38, Luo further discloses processing the L2 service information with the second device using the first routing protocol by injecting the L2 service information into stored route information and resolving the route information to associate routes associated with the injected L2 service information with respective next-hops [para. 0045]. See motivation in claim 1 above.

8. Claims 4, 15, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson as applied to claim 1, and in view of Bragg (US 7,286,479 B2, hereinafter Bragg).

Regarding claims 4, 15, and 27, Sanderson and Luo disclose the claimed invention except for the network layer reachability information (NLRI). Bragg teaches exchange of network level reachability information (NLRI) encoded as address prefixes [col. 1, lines 26-33]. It would have been obvious to a person with ordinary skill in the art at the time the invention was made to incorporate Bragg's teaching into Sanderson's and Luo's method for the purpose of sharing with other autonomous systems a common view of addressing and routing by exchanging network level reachability information (NLRI, encoded as address prefixes), thereby routing between autonomous systems is established and maintained [col. 1, lines 28-33].

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objection made. Applicant must show how the amendments avoid such references and objections. See 37 CFR 1.111(c).
11. Ngo et al., US 2005/0213513 A1, has taught full mesh LSP and full mesh Y-LDP provisioning between provider edge routers in support of layer-2 virtual private network services.

Art Unit: 2457

**Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Lai whose telephone number is (571) 270-3236. The examiner can normally be reached on M-F 8:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

Art Unit: 2457

for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael C. Lai  
02APR2009

/YVES DALENCOURT/  
Primary Examiner, Art Unit 2457